

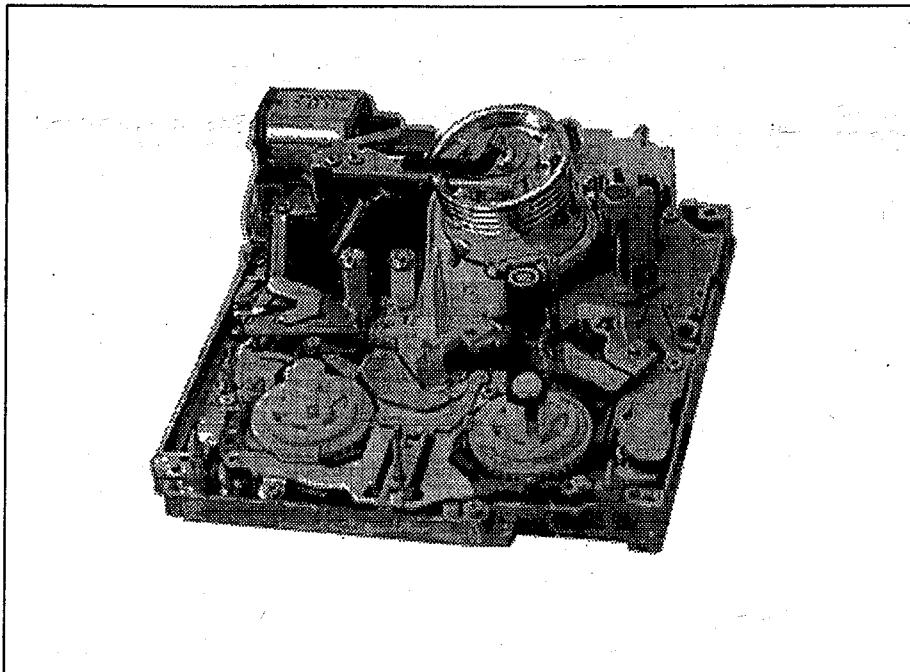
Service Manual

***Disassembly/Assembly
Procedures***
***Mechanical Adjustment
Procedures***
Exploded Views/Parts List

Panasonic Mini DV PAL

Digital Video Camera

DJ MECHANISM CHASSIS



INTRODUCTION

The DJ-Mechanism chassis are built in several Panasonic Digital Video Camera from NV-DX1 series in 1996.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

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1. Mechanical Parts Location

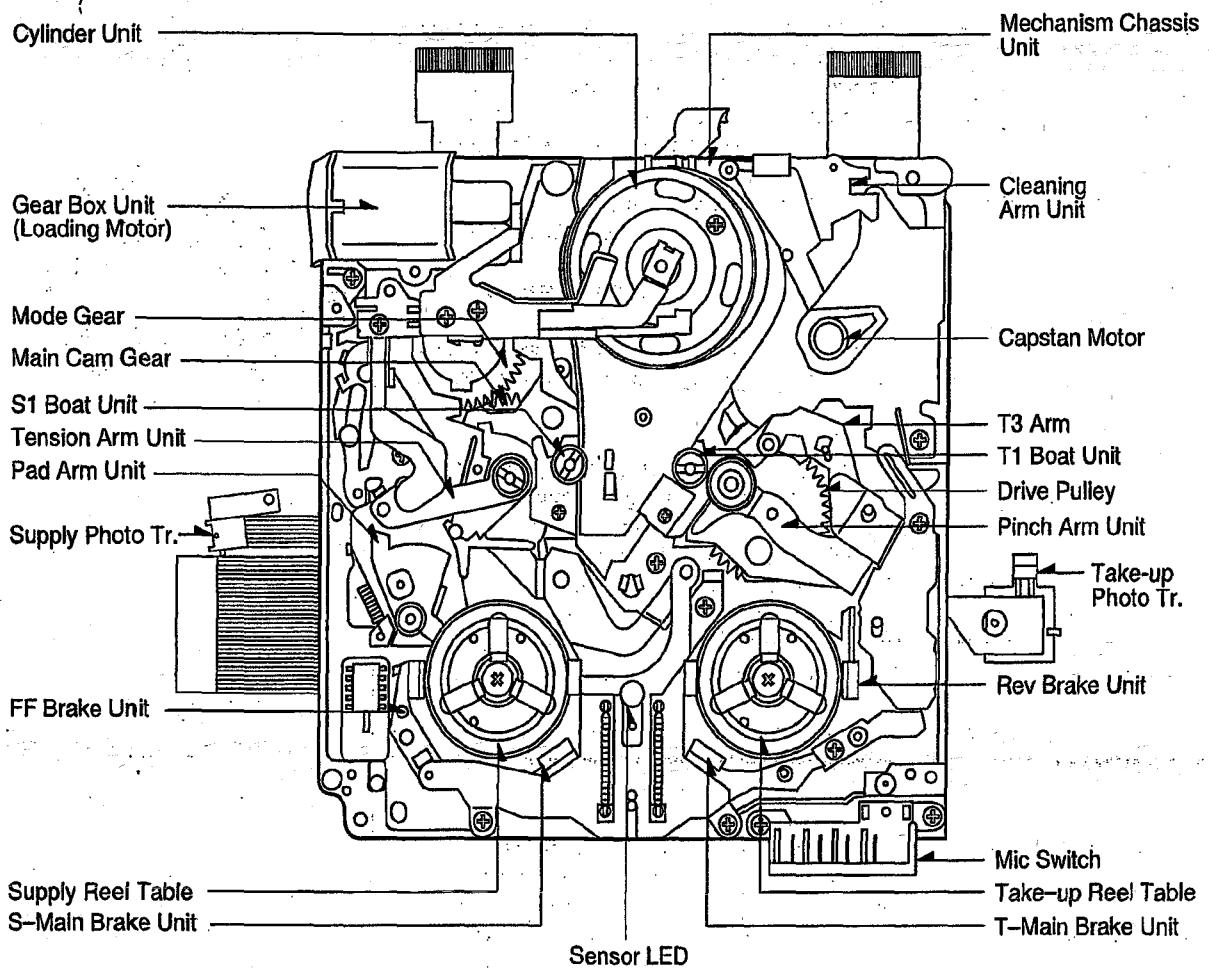


Fig. 1

2. Disassembly/Assembly Procedures of Mechanism

This procedure starts with the condition that the mechanism unit has been removed from the unit.

The following chart indicates disassembly steps of the mechanical parts in order to gain access to part for servicing. When reassembling, perform the steps in the reverse order. Then apply the Molyton Grease to the lubrication point.

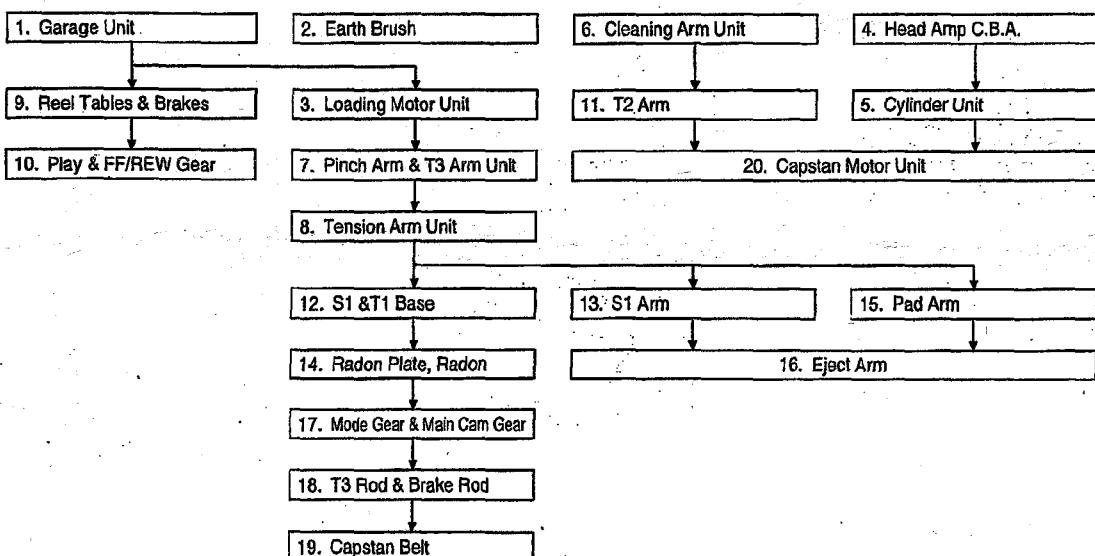


Fig. 2

1. Garage Unit (Manual Eject)	Fig. M1	Slide the Lock Lever using tweezers to eject the Garage Unit.
	Fig. M2	Unscrew 2 screws (A) and remove Supply and Take-up Photo Transistors from Garage Unit. Unscrew 4 screws (B) and remove the Garage Unit.
2. Earth Brush (Note of installation)	Fig. M3	Unscrew 2 screws (C) and remove the Earth Brush.
	Fig. M4	When installing the Earth Brush, align the Earth Brush tip position.
3. Loading Motor Unit	Fig. M5	Unsolder the soldered portion (D).
		Unscrew 2 screws (E) and remove the Loading Motor Unit.
4. Head Amp C.B.A.	Fig. M6	Unscrew screw (F) and remove the Capstan Cover. Disconnect FP5001.
		Unscrew 2 screws (G) and remove the Head Amp C.B.A.
5. Cylinder Unit	Fig. M7	Unscrew 3 screws (H) and remove the Cylinder Unit carefully. Do not touch the Video Head.
6. Cleaning Arm Unit (Note of installation)	Fig. M8	Unlock the locking portion of the Cleaning Arm Unit.
	Fig. M9	Hooking portion of the Cleaning Arm Spring is; Spring (a) — Cleaning Arm Spring (a') Spring (b) — T2 Arm Unit (b')
7. Pinch Arm & unlock T3 Arm Unit (Note of installation)	Fig. M10	Unscrew screw (I), then slide the Pinch Pressure Plate and unlock the locking portion.
	Fig. M11	Remove the T3 Arm Unit. After installed T3 Arm Unit, the Height Adjustment is required.
(Note of installation)	Fig. M12	Remove the Pinch Arm Unit and Pinch Arm Spring. Hooking portion of the Pinch Arm Spring is; Spring (c) — Pinch Arm (c') Spring (d) — T3 Rod (d')
8. Tension Arm Unit (Note of installation)	Fig. M13	Turn the Mode Gear to counter-clockwise until Tension Arm Unit slightly move to loading direction. Remove the Tension Arm Unit and Cut Washer (J). The projection (e) on Tension Arm meets guide (e') on the T3 Rod which is shifted by turning Mode Gear.
9. Reel Tables & Brakes	Fig. M14	Unhook the hooking portion (f) and (f'). Unscrew 3 screws (K) and remove Cover Plate.
	Fig. M15	Remove Supply and Take-up Reel Tables.

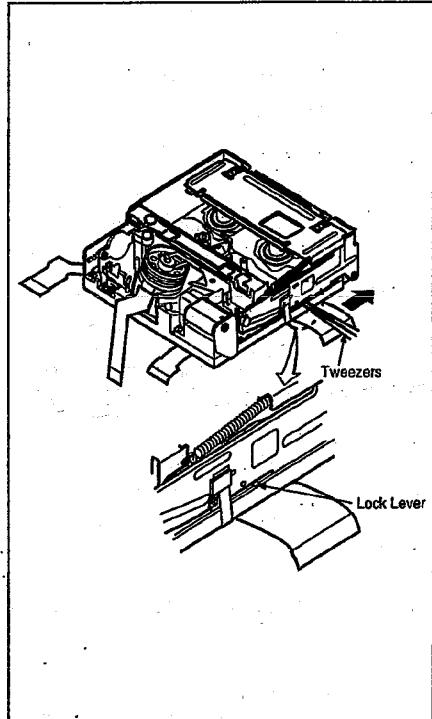


Fig. M1

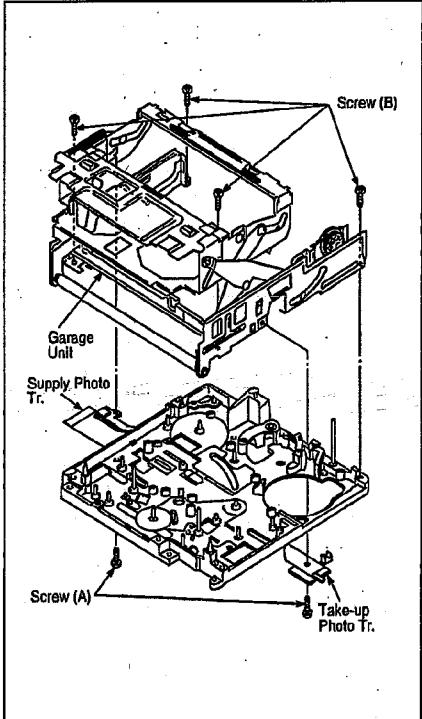


Fig. M2

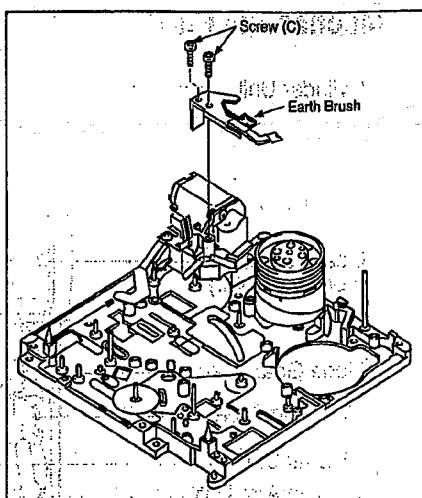


Fig. M3

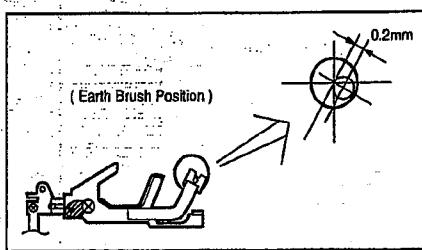


Fig. M4

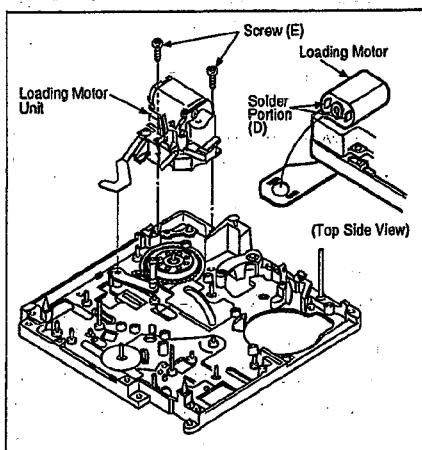


Fig. M5

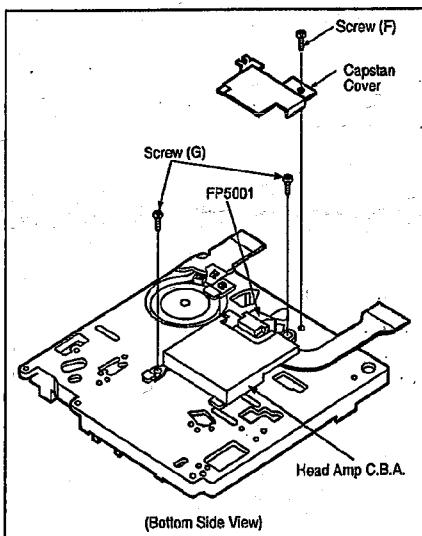


Fig. M6

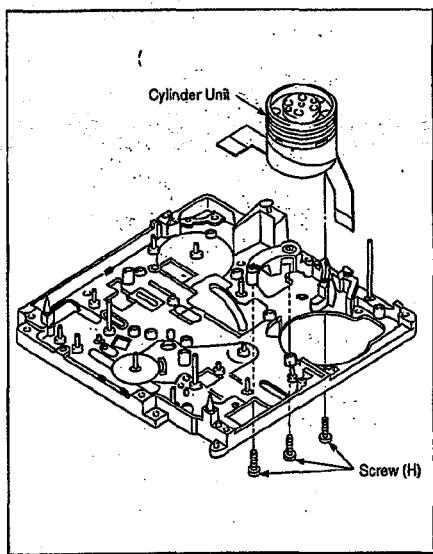


Fig. M7

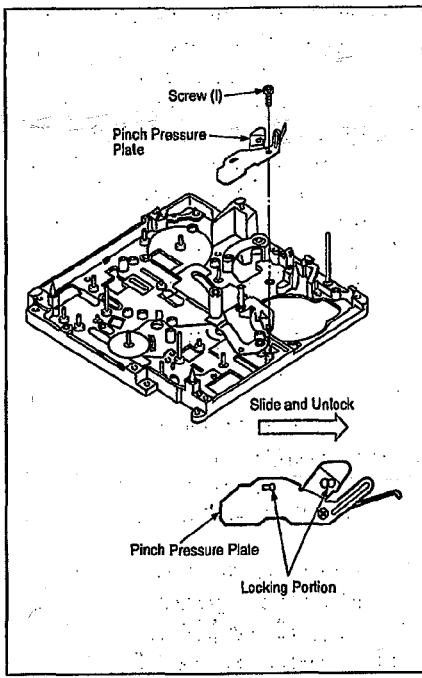


Fig. M10

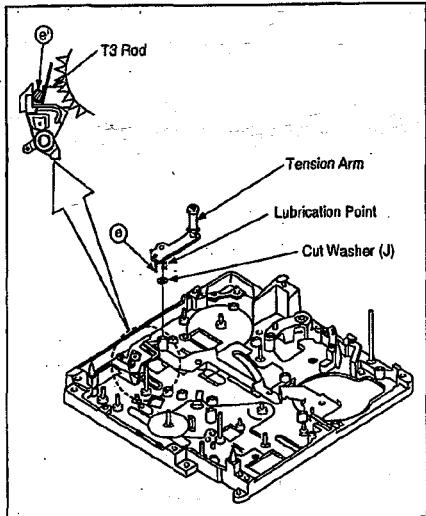


Fig. M13

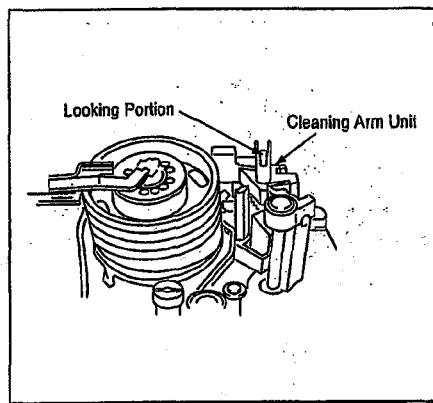


Fig. M8

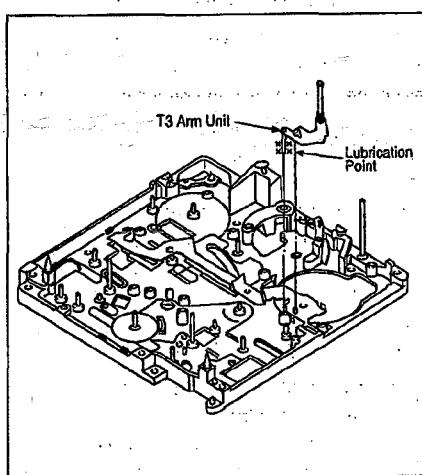


Fig. M11

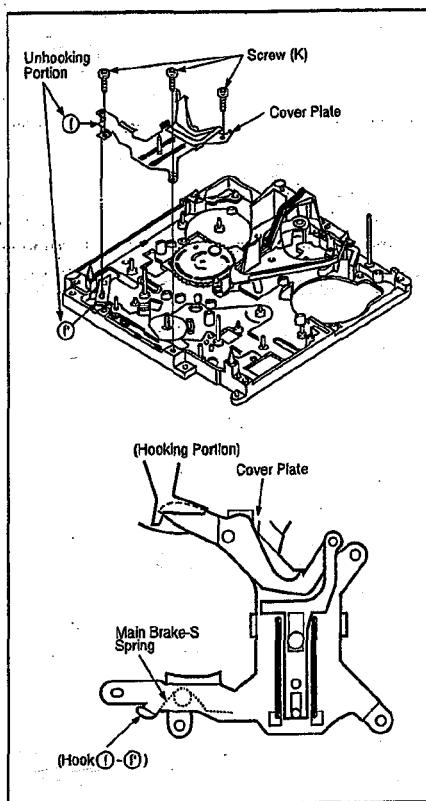


Fig. M14

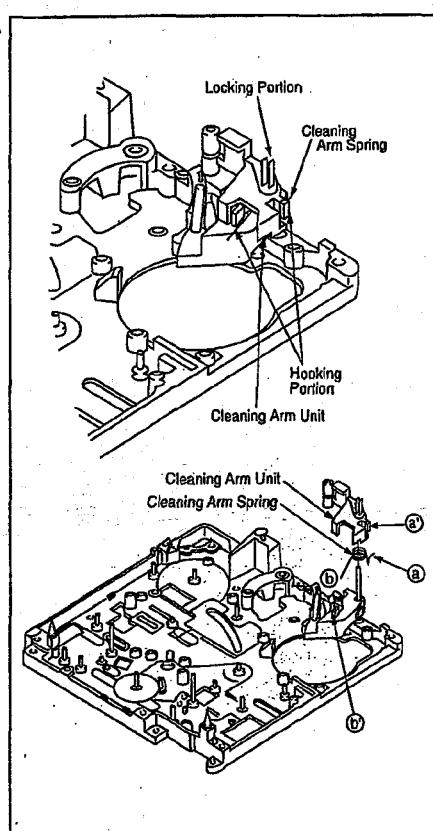


Fig. M9

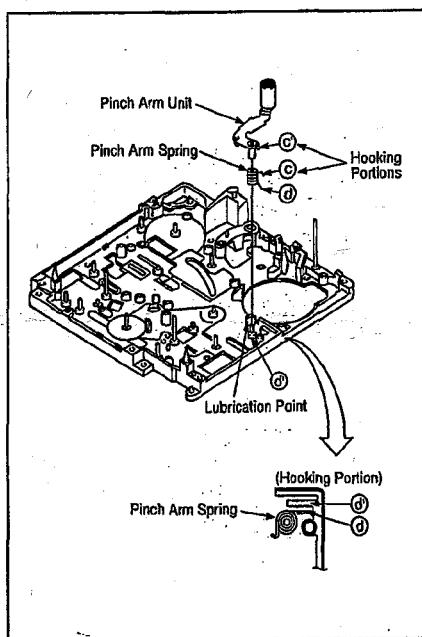


Fig. M12

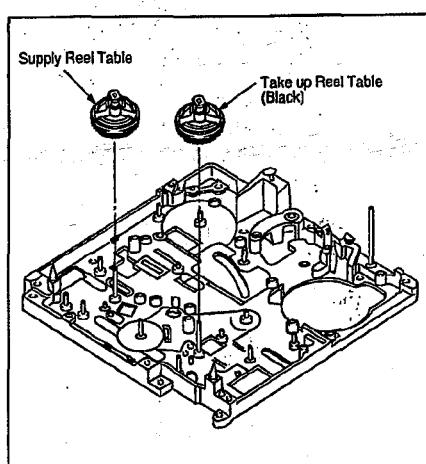


Fig. M15

(Note of installation) Fig. M16 Unhook the hooking portion (g) and (g') of the Review Brake Spring and remove Review Brake.

(Note of installation) Fig. M17 Remove the FF Brake and FF Brake Spring.

(Note of installation) Fig. M18 Confirm the hooking portion of the FF Brake Spring.

(Note of installation) Fig. M19 Remove the Main Brake-S and Main Brake-S Spring.

(Note of installation) Fig. M20 Confirm the hooking portion of the Main Brake-S Spring.

10. Play & FF/REW Gear Fig. M21 Remove the Cut Washer (L) and Main Brake T Unit.

11. T2 Arm Unit Fig. M22 Confirm the hooking portion of the Main Brake T Spring.

(Note of installation) Remove the Play Idler and Play Gear.

12. S1 & T1 Base Fig. M23 Remove the Cut Washer (M) and T2 Arm Unit with Spring.

(Note of installation) Confirm the hooking portion of the T2 Arm Spring.

Turn the Mode Gear to counter-clockwise until half loading position.

Hold (N) and (O) positions on S1 and T1 Arm units and unlock the locking portions (A) and (B) with tweezers.

Fig. M24 Remove 2 screws (P) and Cylinder Base Unit with S and T Boat Units. Then remove S and T Boat Units from the Cylinder Base Unit.

(Note of installation) After install the Cylinder Base Unit, S and T Boat move to completed loading position by finger and turn the Mode Gear to clockwise until half loading position.

Then connect the locking portion (A) and (B).

13. S1 Arm Fig. M25 Turn the Mode Gear to fully counter-clockwise.

Remove the Cut Washer (Q) and S1 Arm Unit.

14. Radon Plate, Radon Arm & T1 Arm Fig. M26 Unscrew 2 screws (R) and remove Radon Plate.

(Note of installation) Unscrew screw (S) and remove Radon Arm Unit.

When installing the T1 Arm Unit, the projection (j) on the Radon Arm Unit is aligned to guide (j') on the T1 Arm Unit by pushing the T1 Arm Unit.

15. Pad Arm Fig. M27 Remove the T1 Arm Unit.

Fig. M28 Unhook the hooking portion (k) of the Pad Arm Spring.

(Note of installation) Remove the Cut Washer (T) and Pad Arm Unit.

Confirm the hooking portion of the Pad Arm Spring (k — k').

16. Eject Arm Fig. M29 Unscrew 2 screws (U) and remove the Eject Arm Unit.

17. Mode Gear & Main Cam Gear Fig. M30 Remove the Main Cam Gear.

Unsolder the soldered portion (I) on the Mechanism Flexible Board. Then remove the Mode Gear.

(Note of installation) The projection (m) on the Mode Gear meets the hole (m') on the Mechanism Chassis.

Push the Brake and T3 Rod in fully left direction.

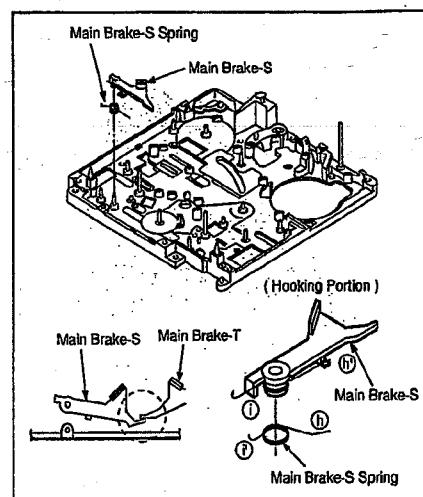


Fig. M18

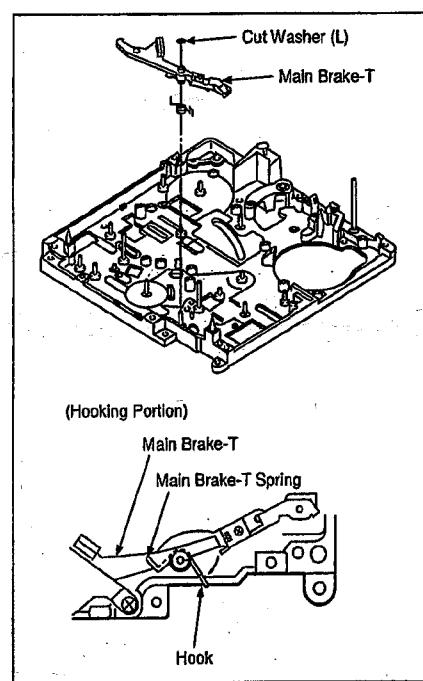


Fig. M19

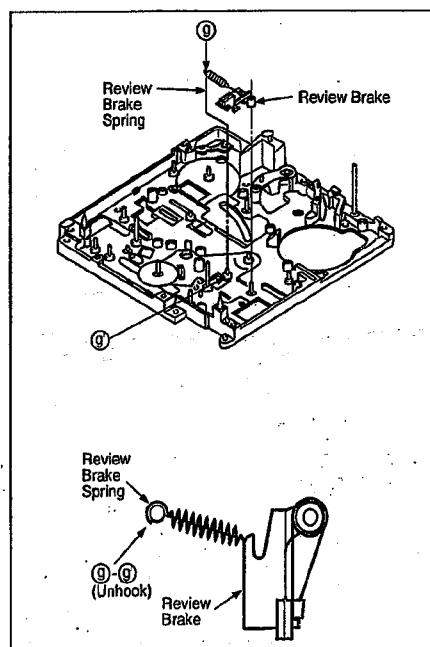


Fig. M16

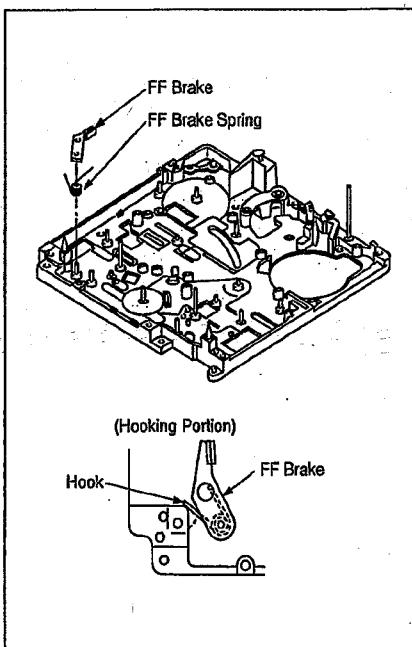


Fig. M17

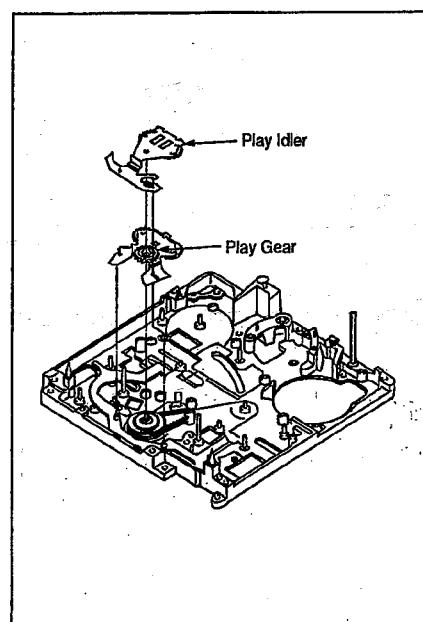
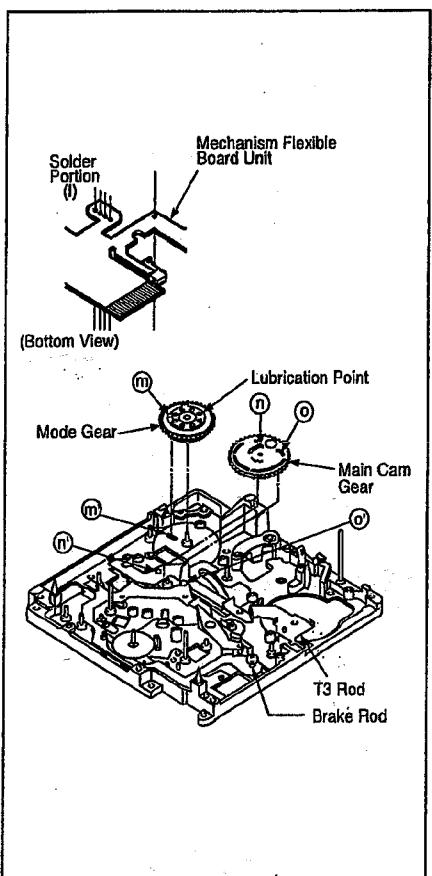
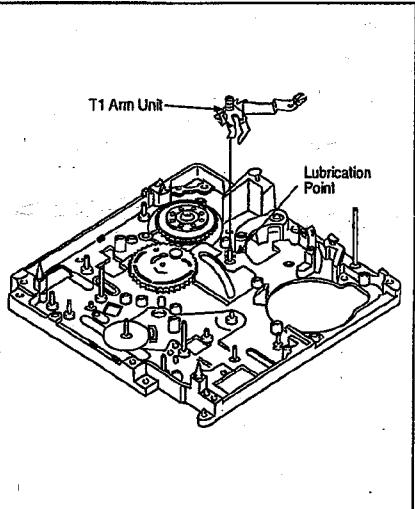
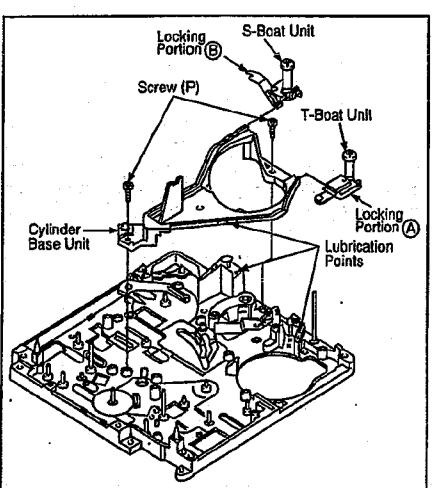
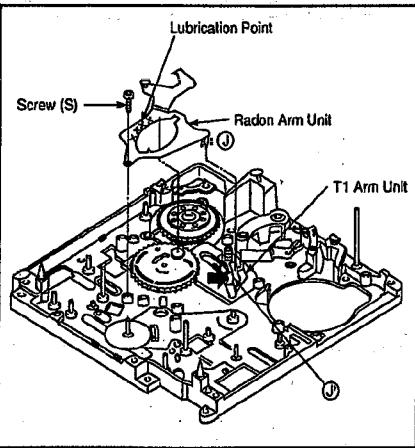
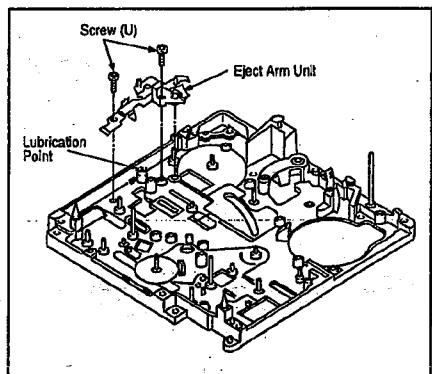
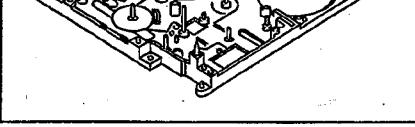
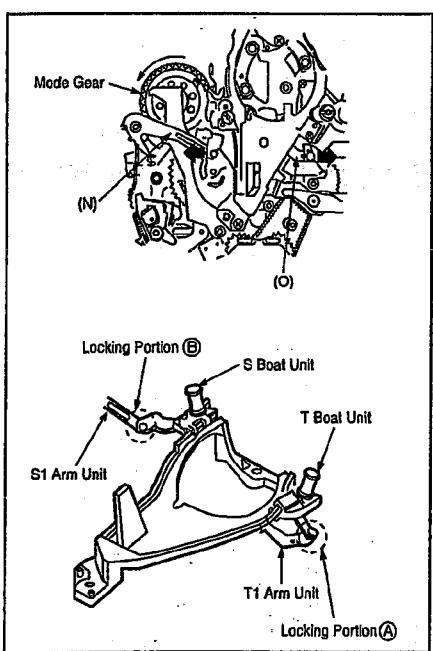
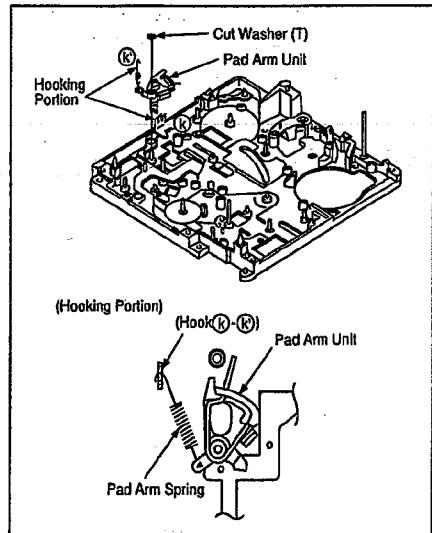
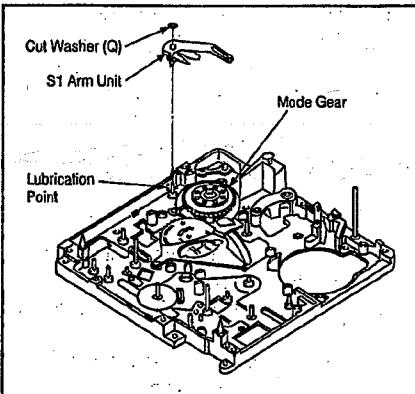
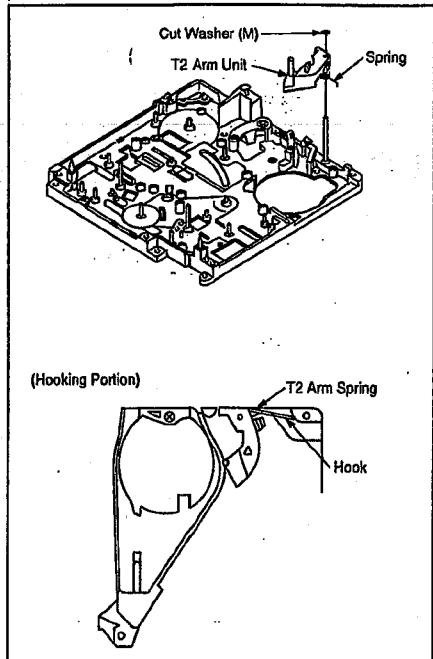
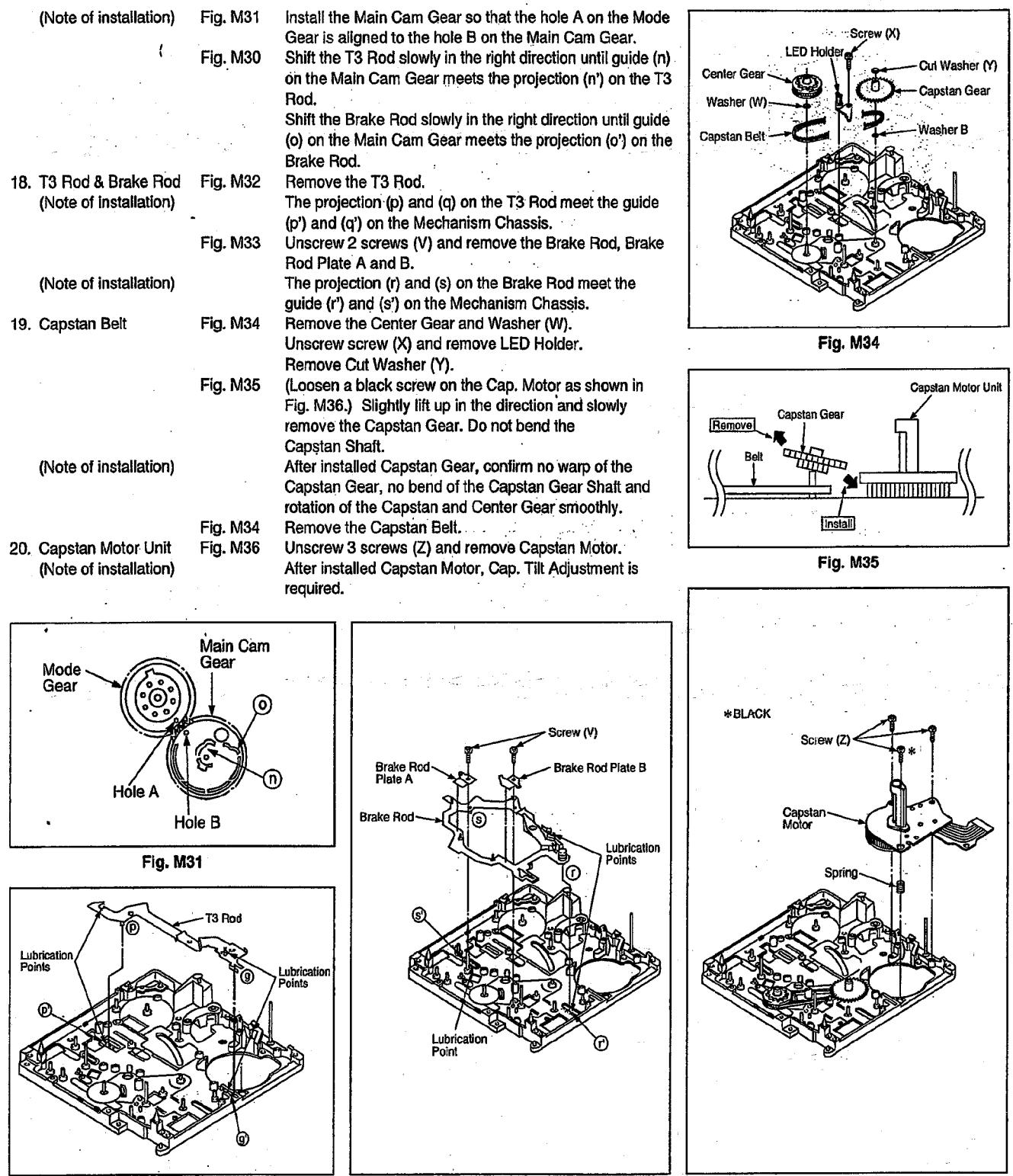


Fig. M20





3. Mechanical Adjustment Procedure

3-1. Test Equipment and Tools

The following equipment is required for Mechanical adjustment:

1. _____
VFKW1000AA Tatsujin Kit for adjustment with PC
VFKW1000C PC-EVR I/F Unit
VFKW0F0142 PC-EVR 232C Cable
VFKW0F0001 PC-EVR I/F Board
VFKW0T0006 Common Cable (2 pcs)
VFKW0T0008 Sub I/F Board for Video
VFKW0T0008 Video Attachment Cable
VFKW0T0008 PC-EVR Software for NV-DX1
VFKW0T0008 Personal Computer

2. VFK1234 BER Counter

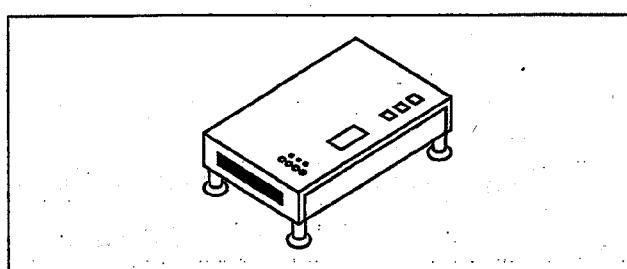


Fig. A1 For monitoring the Bit Error Rate

3. VFK1263 Counter Cables

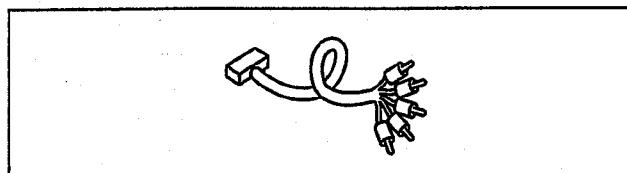


Fig. A2 For connection of the BER Counter

4. VFM3010EDS Alignment Tape

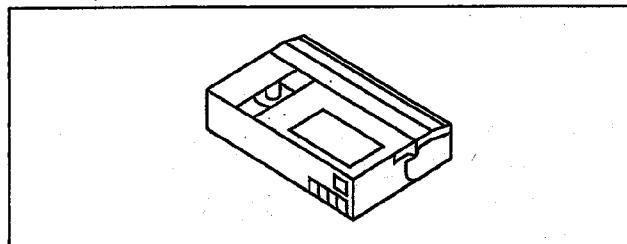


Fig. A3 For B.E.R. Adjustment

5. VFK1217 Sensor Cassette

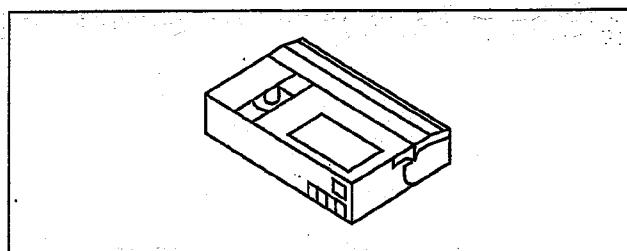


Fig. A4 For Sensor Adjustment

6. VFK1281

Mechanism Plate

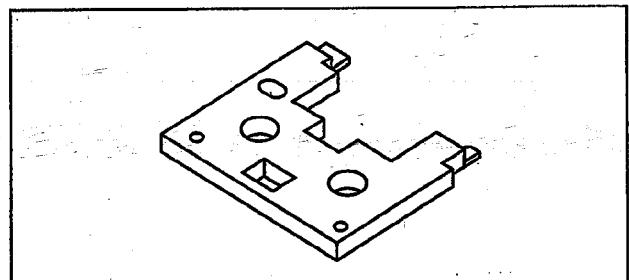


Fig. A5 For Post & Reel Height Adjustment

7. VFK1278

Post Adjustment Drive

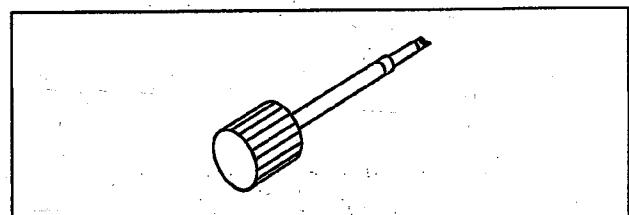


Fig. A6 For Post & Reel Height Adjustment

8. VFK1279

Cap. Tilt Adj. Plate

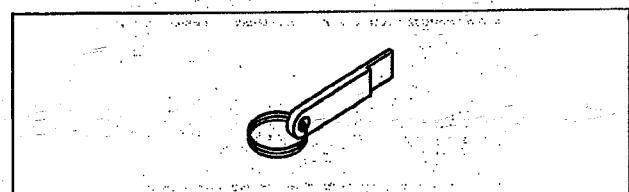


Fig. A7 For Capstan Tilt Adjustment

9. VFK1276

Loading Gear Driver

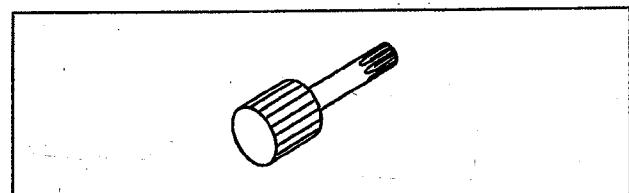


Fig. A8 For manual loading/unloading

3-2. Mechanism Adjustment

When the following parts is replaced, the mechanical adjustment is required.

- Tension Post
- T3 Post
- Pad Arm Unit
- Supply or Take-up Reel Tables
- Capstan Motor

<PREPARATION>

Remove the Garage Unit and Loading Motor Unit as shown in Fig. M1 to M5.

1. Tension Post & T3 Post Height Adjustment

1. Set the Mechanism Plate (VFK1281) on the Mechanism Chassis.

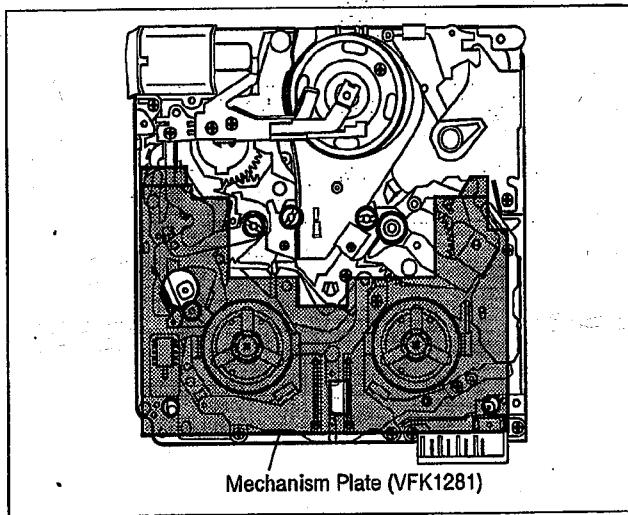


Fig. A9

2. Turn the Mode Gear fully counterclockwise to make full loading condition by using Loading Gear Driver (VFK1276).

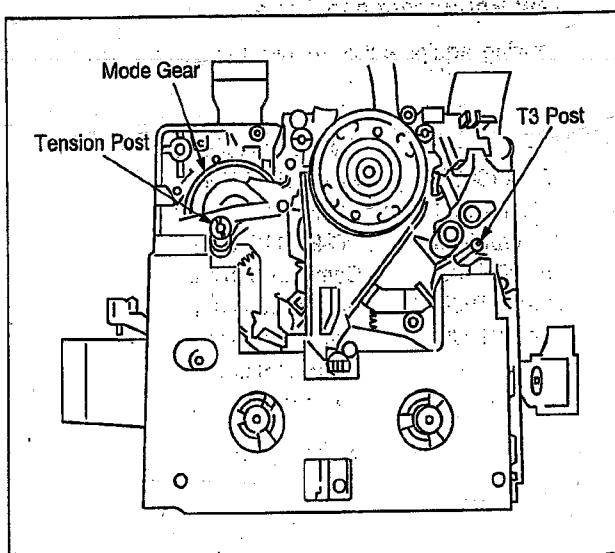


Fig. A10

3. Adjust the Tension Post so that the lower flange (A) point become same height level to the top surface (B) of 2nd step of the Mechanism Plate as shown in Fig. A11.
4. Adjust the T3 Post so that the lower flange (C) point become same height level to the top surface (D) of the Mechanism Plate as shown in Fig. A11.

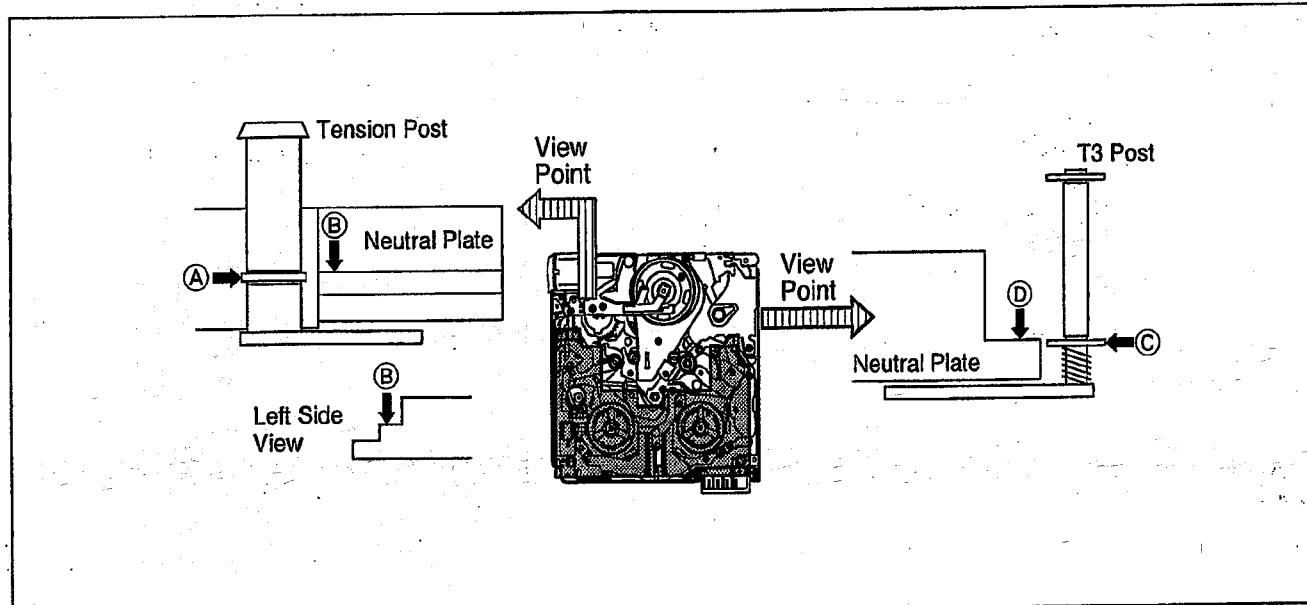


Fig. A11

2. Tension Post Position Adjustment

1. Turn the adjustment piece on the Pad Arm Unit to fully counterclockwise.
2. Turn the Mode Gear to set the Mechanism position in the Play mode, the Soft Brake of the Pad Arm Unit just touch to the Supply Reel Table as shown in Fig. A12.
3. Set the Mechanism Plate on the Mechanism Chassis as shown in Fig. A9.
4. Adjust the adjustment piece on the Pad Arm Unit to clockwise direction slowly until the surface of the Tension Post comes to 2nd step (F) on the Mechanism Plate as shown in Fig. A12.

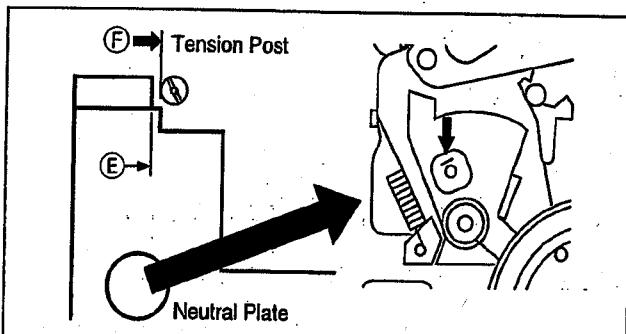


Fig. A12

5. After adjustment, turn the Mode Gear to unloading direction then turn back to loading direction, and make sure that position is correctly stop at above specification in Play position.

3. Supply & Take-up Reel Tables Height Adjustment

This adjustment should be perform for Supply or Take-up Reel Table one by one.

1. Turn the adjustment screw (A) on top of the Supply or Take-up Reel Table fully clockwise. Then, place the Mechanism Plate on the Mechanism Chassis as shown in Fig. A9.
2. Hold the Mechanism Plate by finger and slowly turn the adjustment screw to counterclockwise until just Reel Table rotating with adjustment screw as shown in Fig. A13.
3. Remove the Mechanism Plate and hold the Reel Table by finger then turn the adjustment screw counterclockwise to 45 degrees from above step point.

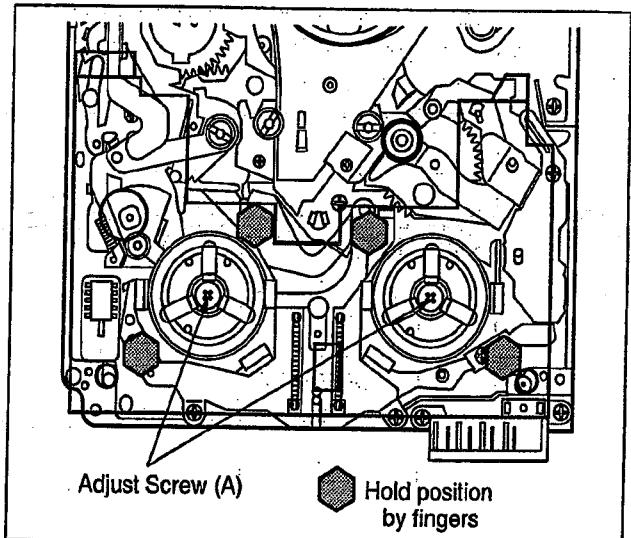


Fig. A13

4. Cap. Tilt Adjustment

1. Loosen the adjustment screw (G) and set the Cap. Tilt Adj. Plate (VFK1279) between Capstan Motor and Mechanism Chassis.
2. Turn the adjustment screw (G) to clockwise direction slowly until the Capstan Motor just touch to the Cap. Tilt Adj. Plate as shown in Fig. A14.

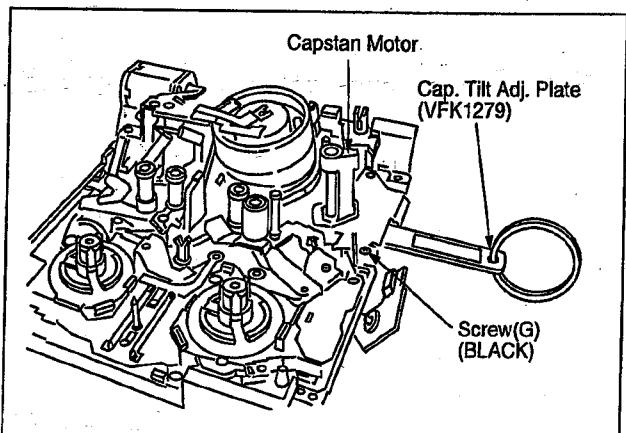


Fig. A14

5. Confirmation

5-1. Confirmation of tape travel

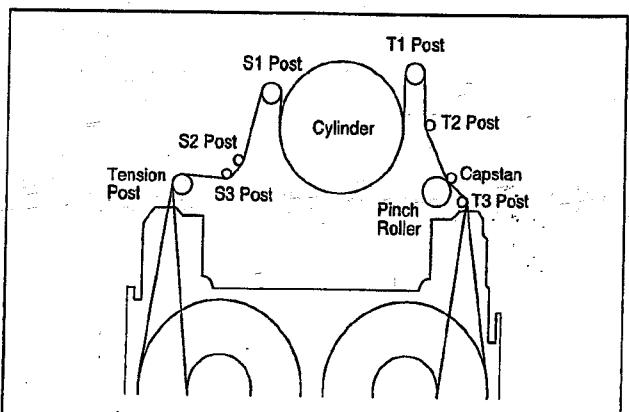


Fig. A15

- Play back the cassette tape and confirm that the tape travels without curling at the upper and lower guides on the following posts in the Play and REV modes as shown in Fig. A17.

	PLAY					REV				
Tension	Free					Free				
S1	Upper Limit					Upper Limit				
T1	Upper Limit					Free				
T3	Do not touch Upper or Lower guides					Free				

Fig. A16

If there are curing or damage at the guide of posts, readjust the height of the posts by turning the post with the Post Adjustment Driver.

5-2. Confirmation of the Envelope Output

1. Connect the "TatsuJin Kit" for video section as shown follows and play back a self recorded colour bar tape.

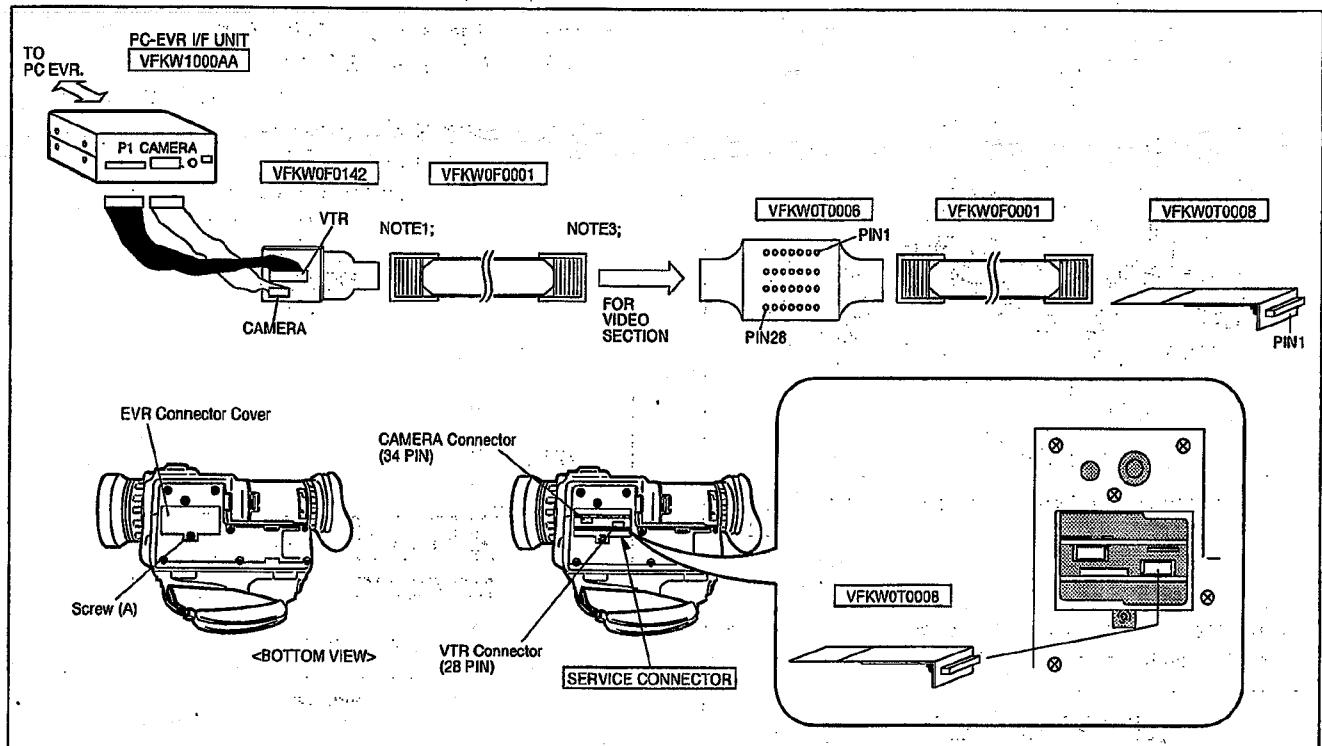


Fig. A17

2. Connect the oscilloscope to VTP1 (Envelope) and VTP2 (GND) on the SUB I/F Board (VFKW0T0006) and confirm that the envelope output is within following specification. Use VTP14 (HID) as a trigger.

V1/V max. 0.9
V2/V max. 0.9
V3/V max. 0.9

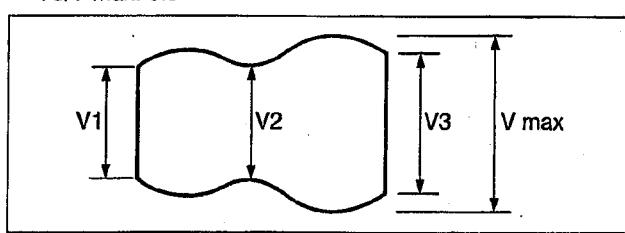


Fig. A18

3. If the level of the envelope signal is out of specification, readjust the Tension Post & T3 Post Height Adjustment.

<When adjusting the envelope signal within unit.>

1. Open the Cassette Door.
2. Unscrew screw (H) and release the Cassette Door Arm.

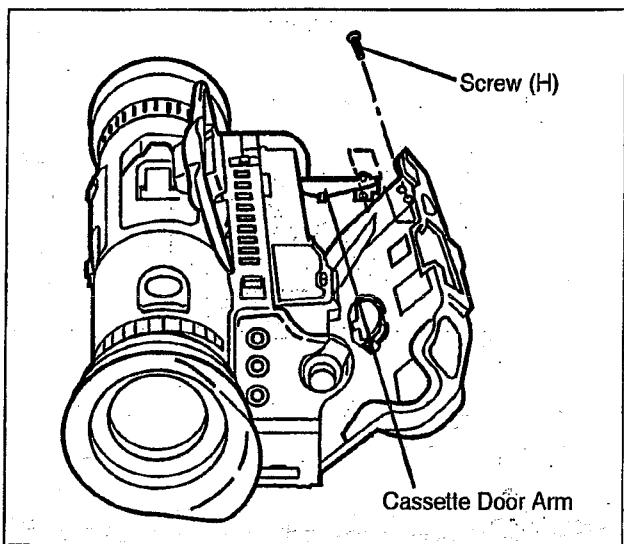


Fig. A19

3. Unscrew 2 screws (I) and remove the Cassette Cover Open/Close Detect Switch C.B.A. to inhibit the detection of the cassette door open.

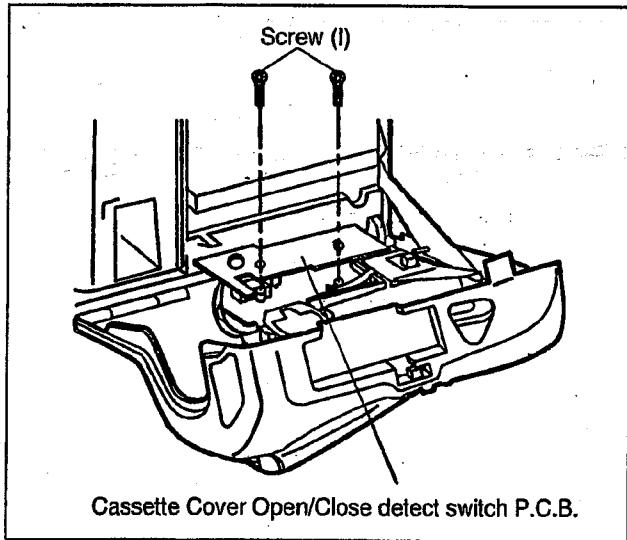


Fig. A20

4. Adjust the envelope signal by connecting the oscilloscope with "Tatsujin Kit" as shown in Fig. A17.

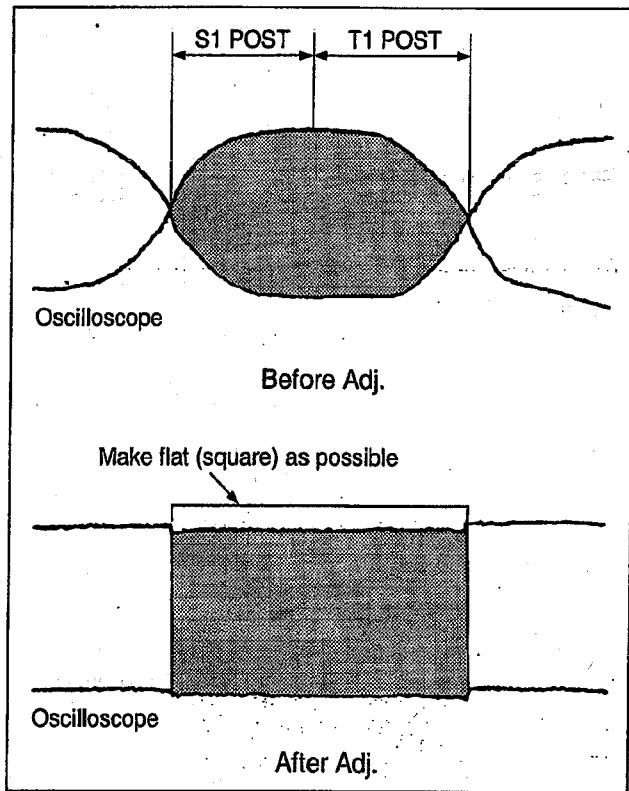


Fig. A21

6. Final Adjustment with BER Counter and "Tatsujin Kit".

RF Adjustment

Tp : VTP23 (SBE)

Mode : PLAY

Tape : Alignment Tape (Colour Bar)

M.Eq. : Oscilloscope, B.E.R. Counter

Spec. : B.E.R. counter number less than 200 on removed Mechanism unit.

Confirm that the B.E.R. counter number less than 50 in the fully assembled condition.

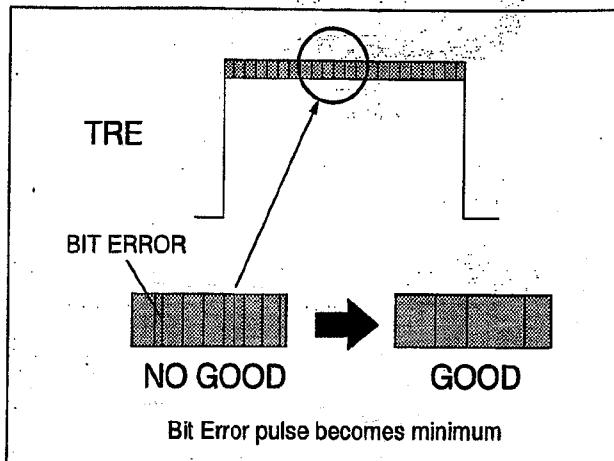


Fig. A22

<Preparation>

Supply DC power supply (6V to 12V) to B.E.R. (Bit Error Rate)

Counter.

Connect B.E.R. Counter (VFK1234) with B.E.R. Counter
Cable (VFK1263) to following TP on PC-EVR I/F Board.

Sub I/F Board BER Counter

Pin 9 [D, GND] ⇒ Black Clip

Pin 22 [CLK18] ⇒ Blue Clip

Pin 23 [SBE] ⇒ White Clip

Pin 24 [HID] ⇒ Red Clip.

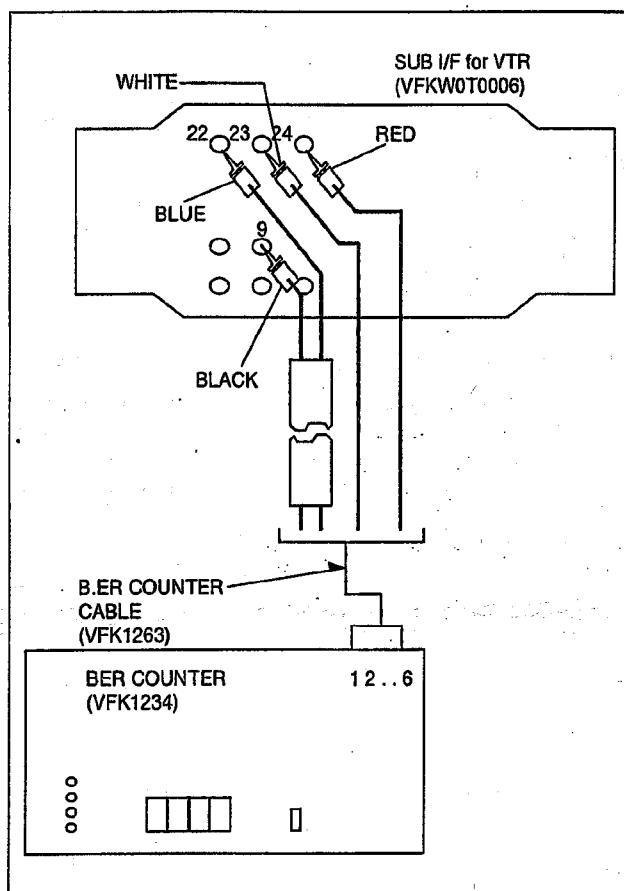


Fig. A23

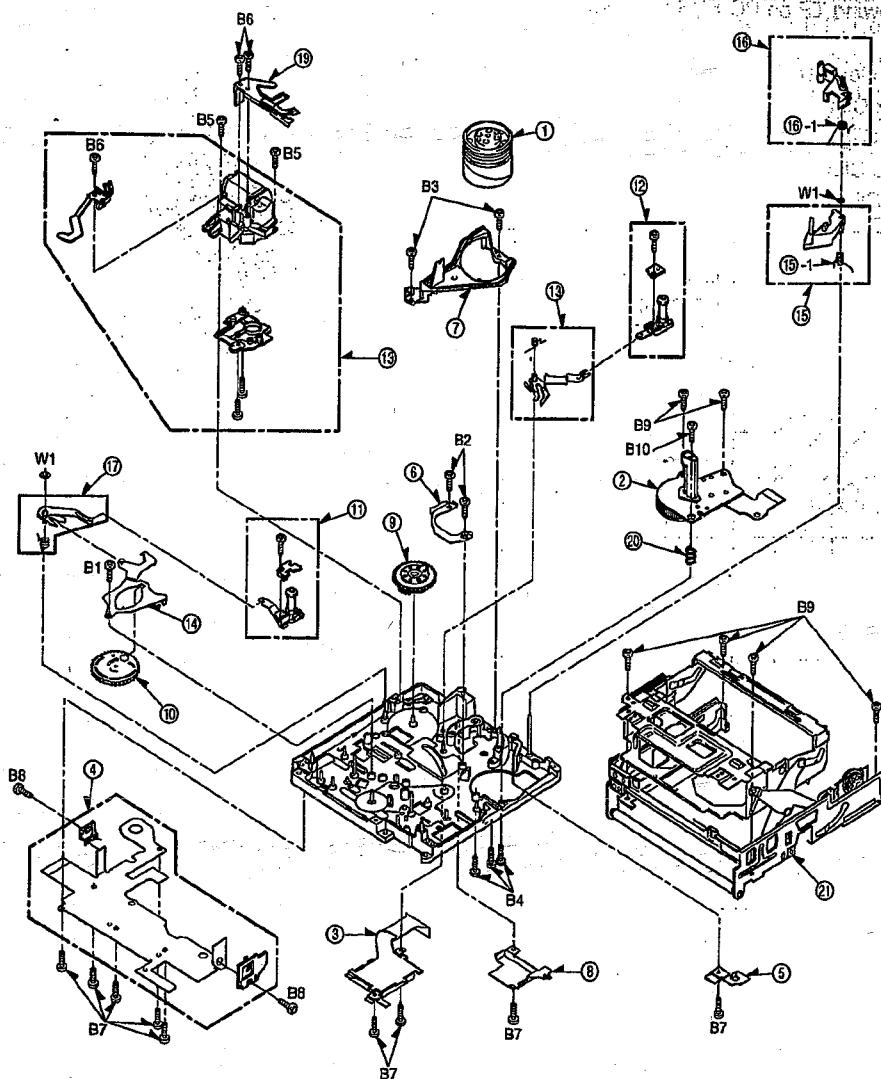
Confirm Bit Error Rate count becomes less than 50 in the assembly condition or less than 200 in the disassembly (Mechanism) condition for each head with B.E.R. Counter.

If not, repeat 5 point adjustments (DL, ERR DL, COMP LEV, CLK PHASE, ALPHA) again.

When the Sync Error happen, Bit Error Rate becomes less than 50 or 200. However, since this is not correct, please re-adjust it.

4. Exploded Views & Parts List

① VCR Mechanism 1 Section



Note: 1. Be sure to make your orders of replacement parts according to this list.

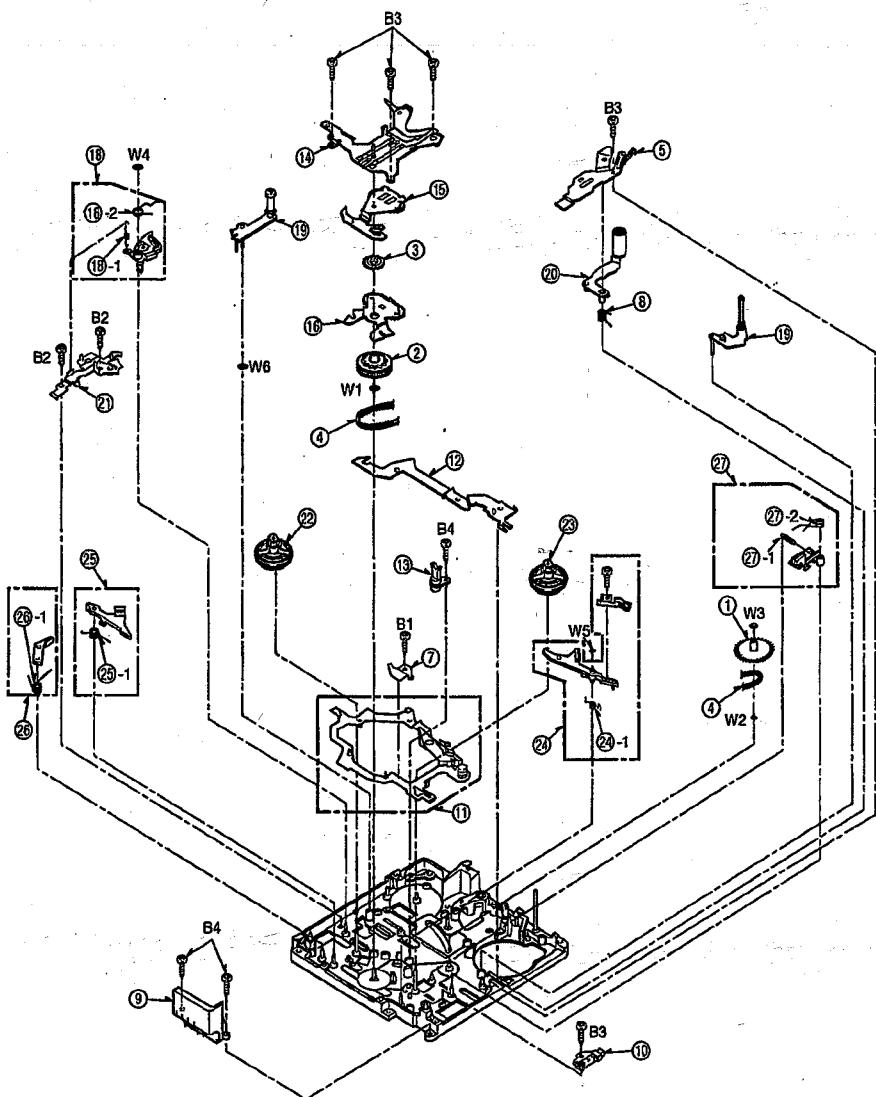
2. IMPORTANT SAFETY NOTICE

Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1 (1)	VEG1217	CYLINDER UNIT	1	For NV-DX1
1 (1)	VEG1438	CYLINDER UNIT	1	For NV-DS1, DS5
2 (1)	VEM0624	CAPSTAN MOTOR UNIT	1	
3 (1)	VEP05224A	HEAD AMP C.B.A.	1	For NV-DX1
3 (1)	VEP05352A	HEAD AMP C.B.A.	1	For NV-DS1, DS5
3-* (1)	VSC4214	HEAD AMP SHIELD CASE	1	For NV-DX1
3-* (1)	VSC4639	HEAD AMP SHIELD CASE	1	For NV-DS1, DS5
4 (1)	VES0711	FLEXIBLE CABLE	1	For NV-DX1
4 (1)	VES0856	FLEXIBLE CABLE	1	For NV-DS1, DS5
5 (1)	VMA9176	CAPSTAN COVER	1	For NV-DX1
5 (1)	VMA9708	CAPSTAN COVER	1	For NV-DS1, DS5
6 (1)	VMA9179	RADON PLATE	1	
7 (1)	VMD2373	RAIL	1	
8 (1)	VSC4215	SHIELD CASE	1	For NV-DX1
8 (1)	VSC4640	SHIELD CASE	1	For NV-DS1, DS5
9 (1)	VSR0114	MODE SW	1	
10 (1)	VXA5407	CAM GEAR	1	
11 (1)	VXA5409	S BOAT UNIT	1	
12 (1)	VXA5410	T BOAT UNIT	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
13 (1)	VXA5417	GEAR BOX (LOADING MOTOR)	1	
14 (1)	VXA5612	RADON COVER UNIT	1	
15 (1)	VXL2461	T2 ARM UNIT	1	
15-1 (1)	VMB2789	T2 ARM SPRING	1	
16 (1)	VXL246B	CLEANING ARM UNIT	1	
16-1 (1)	VMB2791	CLEANING ARM SPRING	1	
17 (1)	VXL2470	S1 ARM UNIT	1	
18 (1)	VXL2471	T1 ARM UNIT	1	
19 (1)	VMA9753	BRUSH ARM STOPPER	1	
20 (1)	VMB2777	CAPSTAN ADJ. SPRING	1	
21 (1)	VXA5387	GARAGE UNIT	1	
B1 (1)	VHD0878	SCREW	1	
B2 (1)	VHD0889	SCREW	2	
B3 (1)	XQN14+B4	SCREW	2	
B4 (1)	VXQ0439	SCREW	3	
B5 (1)	XQN14+B35	SCREW	2	
B6 (1)	XQN14+BQ4	SCREW	1	
B7 (1)	XQN14+B15	SCREW	9	
B8 (1)	XQN14+B2	SCREW	2	
B9 (1)	VHD0882	SCREW	6	
B10 (1)	XQN14+B4FZ	SCREW	1	
W51 (1)	VMX2027	WASHER	2	

② VCR Mechanism 2 Section



Note: 1. Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE

IMPORTANT SAFETY NOTICE
Components identified with the mark have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1 (2)	VDG1030	DRIVE PULLEY	1	
2 (2)	VDG1031	CENTER PULLEY	1	
3 (2)	VDG1032	CENTER GEAR	1	
4 (2)	VDV0265	TIMING BELT	1	
5 (2)	VMA9178	PINCH PRESSURE PLATE	1	
7 (2)	VMA9181	BRAKE ROD SUPPORT (T)	1	
8 (2)	VMB2776	SPRING	1	
9 (2)	VSH0067	MIC SWITCH	1	
10 (2)	VSJ0114	SOLENOID	1	
11 (2)	VXA5401	BRAKE ROD UNIT	1	
12 (2)	VXA5408	T3 ROD UNIT	1	
13 (2)	VXA5411	LED HOLDER UNIT	1	
14 (2)	VXA5412	COVER PLATE UNIT	1	
15 (2)	VXL2454	P IDLER ARM UNIT	1	
16 (2)	VXL2455	FR IDLER ARM UNIT	1	
17 (2)	VXL2456	TENSION ARM UNIT	1	
18 (2)	VXL2732	PAD ARM UNIT	1	
18-1 (2)	VMB2788	TENSION SPRING	1	
18-2 (2)	VMB2787	PAD ARM SPRING	1	
19 (2)	VXL2462	T3 ARM UNIT	1	
20 (2)	VXL2464	PINCH ARM UNIT	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
21	(2) VXL2466	EJECT ARM UNIT	1	
22	(2) VXR0347	SUPPLY REEL TABLE	1	
23	(2) VXR0348	TAKE UP REEL TABLE	1	
24	(2) VXZ0319	TAKE UP MAIN BRAKE	1	
24-1	(2) VMB2782	T MAIN BRAKE SPRING	1	
25	(2) VXZ0321	SUPPLY MAIN BRAKE	1	
25-1	(2) VMB2763	S MAIN BRAKE SPRING	1	
26	(2) VXZ0322	FF BRAKE UNIT	1	
26-1	(2) VMB2784	FF BRAKE SPRING	1	
27	(2) VXZ0323	REV BRAKE UNIT	1	
27-1	(2) VMB2786	REV SPRING	1	
27-2	(2) VMB2785	REV BRAKE SPRING	1	
B1	(2) VHD0882	SCREW	1	
B2	(2) XQN14+B15	SCREW	2	
B3	(2) VHD0883	SCREW	5	
B4	(2) XQN14+B35	SCREW	3	
W1	(2) VMX2503	WASHER	1	
W2	(2) VMX2400	WASHER	1	
W3	(2) VMX2504	WASHER	1	
W4	(2) VMX2027	WASHER	3	
W5	(2) VMX2028	WASHER	1	
W6	(2) VMX2394	WASHER	1	

Memo